WHAT IS CLAIMED IS:

1. A C3 plant expressing a gene of a phylogenetically related C4 plant, comprising DNA containing (a) an expression control region of a gene for an enzyme involved in a photosynthetic pathway of a phylogenetically related C4 plant and (b) a structural gene for an enzyme involved in a photosynthetic pathway of the C4 plant, wherein the C3 plant expresses the enzyme encoded by the structural gene at a high level.

2. A C3 plant according to claim 1, wherein the C4 plant is a monocotyledonous plant, and the C3 plant is a monocotyledonous plant.

3. A C3 plant according to claim 1, wherein the C4 plant is a dicotyledonous plant, and the C3 plant is a dicotyledonous plant.

4. A C3 plant according to claim 1, wherein the DNA is a genome gene of the C4 plant.

5. A C3 plant according to claim 4, wherein the genome gene of the C4 plant is a genome gene of a C4 poaceous plant, and the C3 plant is a C3 poaceous plant.

6. A C3 plant according to claim 5, wherein the genome gene of the C4 poaceous plant is a genome gene for phospho*enol*pyruvate carboxylase from maize, and the C3 poaceous plant is rice.

7. A method for producing a C3 plant which expresses a gene of a phylogenetically related C4 plant, comprising

the steps of:

transforming cells of the C3 plant with DNA containing (a) an expression control region of a gene for an enzyme involved in a photosynthetic pathway of a phylogenetically related C4 plant and (b) a structural gene for an enzyme involved in a photosynthetic pathway of the C4 plant; and

regenerating the transformed cells of the C3 plant into the C3 plant;

wherein the regenerated C3 plant expresses the enzyme encoded by the structural gene at a high level.

8. A method for producing a C3 plant according to claim 7, wherein the C4 plant is a monocotyledonous plant, and the C3 plant is a monocotyledonous plant.

9. A method for producing a C3 plant according to claim 7, wherein the C4 plant is a dicotyledonous plant, and the C3 plant is a dicotyledonous plant.

10. A method for producing a C3 plant according to claim 7, wherein the DNA is a genome gene of the C4 plant.

11. A method for producing a C3 plant according to claim 10, wherein the genome gene of the C4 plant is a genome gene of a C4 poaceous plant, and the C3 plant is a C3 poaceous plant.

12. A method for producing a C3 plant according to claim 11, wherein the genome gene of the C4 poaceous plant is a genome gene for phospho*enol*pyruvate carboxylase from maize, and the C3 poaceous plant is rice.

13. A C3 plant obtainable by a method according to claim 7.

14. A portion of a plant according to claim 13, wherein the potion is a vegetable.

15. A portion of a plant according to claim 13, wherein the potion is a fruit.

16. A portion of a plant according to claim 13, wherein the potion is a flower.

17. A portion of a plant according to claim 13, wherein the potion is a seed.

18. A C3 plant tissue expressing a gene of a phylogenetically related C4 plant, comprising DNA containing (a) an expression control region of a gene for an enzyme involved in a photosynthetic pathway of a phylogenetically related C4 plant and (b) a structural gene for an enzyme involved in a photosynthetic pathway of the C4 plant, wherein the C3 plant tissue expresses the enzyme encoded by the structural gene at a high level.

19. A C3 plant tissue according to claim 18, wherein the C4 plant is a monocotyledonous plant, and the C3 plant tissue is a tissue of a monocotyledonous plant.

20. A C3 plant tissue according to claim 18, wherein the C4 plant is a dicotyledonous plant, and the C3 plant tissue is a tissue of a dicotyledonous plant.

21. A C3 plant tissue according to claim 18, wherein the

DNA is a genome gene of the C4 plant.

22. A C3 plant tissue according to claim 21, wherein the genome gene of the C4 plant is a genome gene of a C4 poaceous plant, and the C3 plant tissue is a tissue of a C3 poaceous plant.

23. A C3 plant tissue according to claim 22, wherein the genome gene of the C4 poaceous plant is a genome gene for phospho*enol*pyruvate carboxylase from maize, and the C3 poaceous plant is rice.

24. A method for producing a C3 plant tissue which expresses a gene of a phylogenetically related C4 plant, comprising the steps of:

transforming cells of the C3 plant with DNA containing (a) an expression control region of a gene for an enzyme involved in a photosynthetic pathway of a phylogenetically related C4 plant and (b) a structural gene for an enzyme involved in a photosynthetic pathway of the C4 plant; and

regenerating the transformed cells of the C3 plant into the C3 plant tissue;

wherein the regenerated C3 plant tissue expresses the enzyme encoded by the structural gene at a high level.

25. A method for producing a C3 plant tissue according to claim 24, wherein the C4 plant is a monocotyledonous plant, and the C3 plant tissue is a tissue of a monocotyledonous plant.

26. A method for producing a C3 plant tissue according to

claim 24, wherein the C4 plant is a dicotyledonous plant, and the C3 plant tissue is a tissue of a dicotyledonous plant.

27. A method for producing a C3 plant tissue according to claim 24, wherein the DNA is a genome gene of the C4 plant.

28. A method for producing a C3 plant tissue according to claim 27, wherein the genome gene of the C4 plant is a genome gene of a C4 poaceous plant, and the C3 plant tissue is a tissue of a C3 poaceous plant.

29. A method for producing a C3 plant tissue according to claim 28, wherein the genome gene of the C4 poaceous plant is a genome gene for phospho*enol*pyruvate carboxylase from maize, and the C3 poaceous plant is rice.

30. A C3 plant seed expressing a gene of a phylogenetically related C4 plant, comprising DNA containing (a) an expression control region of a gene for an enzyme involved in a photosynthetic pathway of a phylogenetically related C4 plant and (b) a structural gene for an enzyme involved in a photosynthetic pathway of the C4 plant, wherein the C3 plant seed expresses, at least upon germination and growing, the enzyme encoded by the structural gene at a high level.

31. A C3 plant seed according to claim 30, wherein the C4 plant is a monocotyledonous plant, and the C3 plant seed is a seed of a monocotyledonous plant.

32. A C3 plant seed according to claim 30, wherein the C4

plant is a dicotyledonous plant, and the C3 plant seed is a seed of a dicotyledonous plant.

33. A C3 plant seed according to claim 30, wherein the DNA containing the expression control region of a gene for the enzyme involved in a photosynthetic pathway of a C4 plant and the structural gene for the enzyme involved in the photosynthetic pathway of the C4 plant is a genome gene of the C4 plant.

34. A C3 plant seed according to claim 33, wherein the genome gene of the C4 plant is a genome gene of a C4 poaceous plant, and the C3 plant seed is a seed of a C3 poaceous plant.

35. A C3 plant seed according to claim 34, wherein the genome gene of the C4 poaceous plant is a genome gene for phospho*enol*pyruvate carboxylase from maize and the C3 poaceous plant is rice.

36. A method for producing a C3 plant seed which expresses a gene of a phylogenetically related C4 plant, comprising the steps of:

transforming cells of the C3 plant with DNA containing (a) an expression control region of a gene for an enzyme involved in a photosynthetic pathway of a phylogenetically related C4 plant and (b) a structural gene for an enzyme involved in a photosynthetic pathway of the C4 plant;

regenerating the transformed cells of the C3 plant into the C3 plant; and

obtaining a seed from the C3 plant;

wherein the C3 plant seed expresses, at least

upon germination and growing, the enzyme encoded by the structural gene at a high level.

37. A method for producing a C3 plant seed according to claim 36, wherein the C4 plant is a monocotyledonous plant, and the C3 plant seed is a seed of a monocotyledonous plant.

38. A method for producing a C3 plant seed according to claim 36, wherein the C4 plant is a dicotyledonous plant, and the C3 plant seed is a seed of a dicotyledonous plant.

39. A method for producing a C3 plant seed according to claim 36, wherein the DNA is a genome gene of the C4 plant.

40. A method for producing a C3 plant seed according to claim 39, wherein the genome gene of the C4 plant is a genome gene of a C4 poaceous plant, and the C3 plant seed is a seed of a C3 poaceous plant.

41. A method for producing a C3 plant seed according to claim 40, wherein the genome gene of the C4 plant is a genome gene for phospho*enol*pyruvate carboxylase from maize, and the C3 poaceous plant is rice.